Below are some bonus questions for those looking for extra practice.

Textbook questions:

- Chapter 6: problems 2a-c, 3.

- Chapter 7: problems 1, 3, 5.

- Chapter 8: problem 3, 7a, 8a, 12.

Extra Problem 1

a. Fill in the following table:

Q	Price	TC	Total Variable Cost	Total Fixed Costs	Marginal Cost	Total Revenue	Marginal Revenue	Price Elasticity
80		5610	5600		NA	27200	NA	NA
	320		6400			28800		
95		7010					130	
100	300		7500					
110					100	30800	80	

Table 1: Cost/Revenue table.

b. Approximately how much should the firm produce and approximately what price should be charged?

Extra Problem 2

A firm builds condos in Miami and is considering how big of a building to build. That is, how many condo units (Q) to build. The total cost function is (thousands of dollars):

$$TC = 40 + 5Q + 2Q^2. \tag{1}$$

Demand is:

$$Q = 160 - 2P. \tag{2}$$

a. Calculate the quantity of condos which maximizes profits assuming imperfect competition.

b. Calculate the price and price elasticity at the profit maximizing quantity.

c. Calculate total profits.

Now suppose that the firm is deciding whether or not to add granite counters. Adding granite counters costs 3 (i.e. $3 thousand) per condo unit. Suppose the firm believes that demand would increase by another 36 units with granite counter tops (i.e. new demand is $Q = 196 - 2P$).

d. Calculate the quantity of condos which maximizes profits assuming imperfect competition.

e. Calculate the price.

f. Calculate total profits.

g. Should the builder offer granite counters? Explain.

Extra Problem 3

Jack's Body Shop incurs total costs given by:

$$TC = 2{,}400 + 100Q. \tag{3}$$

Here Q is the number of paint jobs, each of which has price equal to $120.

a. Calculate the break even point.

b. Suppose the firm is using cost plus pricing, with a mark-up over average variable costs. What is the markup?

c. Suppose the price elasticity is -5. Calculate the optimal price.

d. Give one reason why the cost-plus and optimal price differ.

Extra Problem 4

An importer of specialty items from Latin America has a demand curve of:

$$Q = 25 - P, \tag{4}$$

where Q is the number of items demanded, and a total cost function of:

$$TC = 25 + Q + 5Q^2. \tag{5}$$

a. Calculate the quantity which maximizes profits, assuming imperfect competition.

b. Calculate the price and price elasticity at the profit maximizing quantity.

c. Calculate the total profits.

d. In the long run, would you expect other competitors to enter this market? Explain.

Extra Problem 5

a. A cement manufacturer estimates the price elasticity for the firm's cement is -3. If the marginal cost is \$2, what price should the firm charge?

b. A cement manufacturer has marginal costs of \$4 and charges a price of \$16. If the cement manufacturer is pricing cement optimally, what is the price elasticity?

Extra Problem 6

Suppose the long run average cost curve for oil extraction via fracking is:

$$LRAC = 1290 - 100Q + 2Q^2, \tag{6}$$

where Q is barrels of oil extracted.

a. Calculate the optimal size of a fracking firm.

b. Given the market for oil is perfectly competitive, what price of oil would you expect in the long run?

c. Suppose the price of oil is \$60, would you expect firms to enter or exit the fracking industry?

d. Suppose the price of oil is \$30, would you expect firms to enter or exit the fracking industry?

e. Suppose two identical fracking firms each produce $Q = 15$. Should these two firms merge? Explain.

f. Suppose two fracking firms produce $Q = 10$ and $Q = 5$. Should these two firms merge? Explain.

Extra Problem 7

Suppose Sprint wants to price discriminate on a Galaxy phone using a mail-in rebate. Suppose two types of customers exist: a group that has little time to fill in rebates and mail them in, who have price elasticity equal to -2, and a group who have time to mail in the

rebate, who have a price elasticity of -4. Suppose the wholesale cost of the phone is $400 and that the wholesale cost is the only marginal cost. What is the price of the phone and how much is the mail-in rebate?

Extra Problem 8

The market for ferrous scrap metal is dominated by many small producers and is best characterized as perfectly competitive. Suppose a firm in this industry wants to price discriminate by offering a mail-in rebate. Is this strategy likely to increase profits? Explain.